Patent claims

1. A device for the generation and/or destruction of vortices in a flow medium (S), said device comprising one or more profiles (1) arranged in a flow duct (12) and provided for flow around by the flow medium (S), the or each profile (1) being assigned an external drive designed for the generation of a periodic oscillating movement of the respective profile (1) in relation to the flow medium (S) with an angular frequency ω.

2. The device as claimed in claim 1, the shape and size of the profiles (1) being selected such that, during operation, the quotient of the flow velocity averaged over a movement period of the profile (1) and the maximum flow velocity at the profile trailing edge (4) has a predetermined value.

3. The device as claimed in claim 1 or 2, in which the periodic oscillating movement provided is a pivoting movement of the profiles (1) as a result of the rotation of the profiles (1) about an axis of rotation (14) perpendicularly to the flow direction of the flow medium (S) through an angle φ.

4. The device as claimed in claim 3, the flow duct (12) having arranged in it two profiles (1) which oscillate with the same angular frequency ω and opposite phase about their respective axis of rotation (14), the axes of rotation (14) being oriented parallel to one another.

5. The device as claimed in claim 1 or 2, in which the periodic oscillating movement consists of a

periodic displacement of the profiles (1) perpendicularly to a flow direction of the flow medium (S).

6. The device as claimed in claim 1 or 2, in which the periodic oscillating movement consists of a periodic displacement of the profiles (1) parallel to the flow direction of the flow medium (S).

7. The device as claimed in claim 1 or 2, in which the periodic oscillating movement consists of a combination of a displacement of the profile (1) in relation to the flow duct (12) and of a rotation of the profile (1) about an axis of rotation (14).

8. The device as claimed in one of claims 1 to 7, which is followed on the flow medium side by a device for the destruction of vortices.

9. A conveying zone for the transport of a flow medium (S), in the flow duct (12) of which is arranged a device as claimed in one of claims 1 to 3 or 5 to 8, which comprises a number of profiles (1) which execute a periodic oscillating movement with the same angular frequency ω and the same phase.

10. A conveying zone for the transport of a flow medium (S), in the flow duct (12) of which is arranged a device as claimed in one of claims 1 to 8, which comprises a number of profiles (1) which execute a periodic oscillating movement with the same angular frequency ω and an opposite phase.

11. An axial cascade for the throughflow of a flow medium (S), said cascade being preceded on the flow medium side by a device as claimed in one of claims 1 to 3 or 5 to 8, which comprises a number of profiles (1) which execute a periodic oscillating movement with the same angular frequency ω and the same phase.

12. A cooling device for the cooling of components subjected to high thermal load, which comprises a flow duct (12), a cooling stream conducted through the flow duct (12) and a device as claimed in one of claims 1 to 8 which is arranged within the flow duct (12).

13. A mixing zone for the mixing of one or more flow media (S) with one another, which comprises a flow duct (12) through which the flow media (S) are capable of flowing and a device as claimed in one of claims 1 to 8.

14. A gas turbine having a device as claimed in one of claims 1 to 13.

15. A method for the generation of vortices in a flow medium (S) by means of one or a number of profiles (1) arranged in a flow duct (12) and provided for flow around by the flow medium (S), the profiles (1) oscillating periodically with the angular frequency ω by means of an external drive.

16. The method as claimed in claim 15, in which the direction of energy transmission between the moved profile (1) and the flow medium (S) is set via the quotient of the flow velocity averaged over a movement period of the profile (1) with respect to the mean cross section of the profile (1) and the maximum flow velocity at the trailing edge (4) of the profile (1).

17. The method as claimed in claim 15, in which the direction of energy transmission between the profile (1) and the flow medium (S) is set via the product of the maximum flow velocity of the trailing edge (4) of the

profile (1) and of the elongation of the flow-around profile (1), divided by the kinematic viscosity of the flow medium (S).

5

18. The method as claimed in one of claims 15 to 17, in which the generated vortices are completely or partially destroyed again downstream of the position in the flow duct (12) at which they were generated.

19. The method as claimed in one of claims 15 to 18, which is used for the transport of a flow medium (S) through a flow duct (12).

20. The method as claimed in one of claims 15 to 18, which is used for increasing the efficiency of a cascade flow of the flow medium (S) through a cascade arranged within the flow duct (12).

21. The method as claimed in one of claims 15 to 18, which is used for the cooling of components subjected to high thermal load by means of a flow medium (S).

22. The method as claimed in one of claims 15 to 18, which is used for mixing one or more flow media (S) in a flow duct (12).